AMENDMENT

In the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application. Currently amended claims are shown with additions underlined and deletions in ~~strikethrough text~~. No new matter is added by this amendment.

1. (Currently amended) A method of quality assurance for a biological diagnostic using mass spectral data from an electrospray process, comprising:

selecting a diverse group of sera, the diverse group of sera having different characteristics;

diluting each serum of the diverse group of sera with a plurality of different diluents;

obtaining information associated with a mass spectrum of each of the diluted sera from the diverse group of sera using ~~an~~the electrospray process;

generating a control model based at least in part on the ~~spectrum~~spectra obtained from the diverse group of sera, the control model including at least one control centroid located in an n-dimensional space defined by n mass spectral features included in the control model;

diluting a test serum with a test diluent;

performing mass spectrometry on the test serum to obtain a test spectrum associated with the test serum;

mapping the test spectrum obtained from said performing to the ~~control model~~n-dimensional space;

~~determining whether~~if the test spectrum ~~obtained from said performing maps to the control model.~~ maps to the n-dimensional space within an acceptable distance from the control centroid, submitting the test spectrum to the biological diagnostic.

2. (Canceled)

3. (Original) The method of claim 1, wherein said diluting each serum of the diverse group of sera includes diluting the sera with diluents having a predetermined diluent concentration, and said diluting a test serum with a test diluent includes diluting a test serum with a diluent having the same concentration as the diluent used to dilute each serum of the diverse group of sera.

4. (Original) The method of claim 1, wherein said diluting each serum of the diverse group of sera includes diluting the sera with diluents having a predetermined diluent concentration, and said diluting a test serum with a test diluent includes diluting a test serum with a diluent having a different concentration than the diluent used to dilute each serum of the diverse group of sera.

5. (Original) The method of claim 1, further comprising:

classifying a biological state from the spectrum based on a predetermined biological state model.

6. (Currently amended) The method of claim 1, wherein if ~~said determining determines that~~ the test spectrum does not map to the n-dimensional space within an acceptable distance from the control ~~model~~centroid, and the test diluent is a first diluent, the method further comprising:

repeating the steps of diluting, performing, mapping, and determining for a second diluent different from said first diluent.

7. (Original) The method of claim 1, said selecting further comprising:

selecting at least two different sera from a pool of diverse sera, the pool of diverse sera consisting of: sera from healthy males, sera from healthy females, sera from males afflicted with a disease, sera from females afflicted with a disease, sera from persons of different races, and sera from people of different ages.

8. (Currently amended) The method of claim 1, wherein said generating includes:

identifying at least one cluster in common to the sera of the diverse group of sera and the plurality of different ~~diluent~~diluents; and

selecting only one cluster as ~~part~~the control centroid of the control model.

9. (Original) The method of claim 1, wherein the obtaining information includes:

obtaining information on sera diluted with two different diluents, the diluents including at least acetonitrile and methanol.

10. (Original) The method of claim 1, wherein the test diluent is one of the plurality of different diluents.

11. (Original) The method of claim 1, wherein the test diluent is not one of the plurality of different diluents.

12. (Currently amended) A method of quality assurance for a biological diagnostic employing a control model generated based on mass spectra obtained from sera analyzed following an electrospray process, the spectra being associated with a plurality of different sera and a plurality of different diluents, the control model including at least one control centroid located in an n-dimensional space defined by n mass spectral features included in the model, comprising:

diluting a test serum using a test diluent;

ionizing the diluted test serum using an electrospray ~~ionization~~ process;

performing mass spectrometry on the ionized diluted test serum to obtain test spectral data associated with the test serum and the test diluent; and

mapping the test spectrum to the ~~control model, said mapping being performed to determine if the serum and the diluent are suitable for further diagnostics.~~n-dimensional space; and

if the test spectrum maps to the n-dimensional space within an acceptable distance from the control centroid, submitting the test spectrum to the biological diagnostic.

13. (Currently amended) The method of claim 12, ~~further comprising:~~

~~determining that the serum and diluent are suitable for further diagnostics; and~~

wherein the submitting ~~the spectral data to a~~includes submitting the test spectrum to the biological ~~model~~diagnostic to determine if the ~~biological sample~~test serum exhibits a particular biological state.

14. (Currently amended) The method of claim 13, wherein ~~diluting a serum includes diluting a serum using~~the test diluent is one of acetonitrile and methanol

15. (Canceled)

16. (Currently amended) The method of claim ~~15,~~1, wherein said ~~diluting at least two of a diverse group of sera includes diluting a diverse group of sera using at least one of~~plurality of different diluents includes acetonitrile and methanol.

17. (Currently amended) The method of claim ~~15,~~1, wherein said diluting ~~at least two sera~~each serum of ~~a~~the diverse group of sera includes creating a plurality of dilutions of ~~the at least two of the plurality of diverse group of sera~~each serum with a diluent ~~having~~at a plurality of concentrations.

18. (Currently amended) The method of claim ~~15,~~17, wherein said ~~diluting at least two sera of a diverse group of sera includes creating a plurality of dilutions of the at least two of the plurality of diverse group of sera with a diluent having a plurality of concentrations, the concentrations ranging~~plurality of concentrations ranges between 1:250 to 1:1000.

19. (Canceled)

20. (Currently amended) The method of claim ~~15,~~1, wherein said diluting ~~the~~a test serum includes diluting ~~the~~a test serum with a known diluent.

21. Currently amended) The method of claim ~~15,~~1, wherein said diluting ~~the~~a test serum ~~with a diluent~~ includes diluting ~~the~~a test serum with ~~the same diluent~~one of the plurality of different diluents used to dilute the ~~at least two sera of a~~ diverse group of sera.

22. (Currently amended) The method of claim ~~15,~~1, wherein said diluting ~~the~~a test serum ~~with a diluent~~ includes diluting ~~the~~a test serum with a test diluent different ~~diluent than the diluent~~than any of the plurality of different diluents used to dilute the ~~at least two sera of a~~ diverse group of sera.

23.-26. (Canceled)

27. (New) A method of quality assurance for a biological diagnostic using mass spectral data from an electrospray process using sera diluted with diluent, comprising:

providing in an n-dimensional space defined by n mass spectral features a location of at least one control centroid associated with one diluent and that distinguishes the one diluent from at least one second diluent;

using an electrospray ionization process, ionizing a test serum diluted with a test diluent to generate a test mass spectrum;

mapping the test mass spectrum to the n-dimensional space;

if the spectrum maps to the n-dimensional space within an acceptable distance from the control centroid, certifying the spectrum for analysis with the biological diagnostic.

28. (New) A quality control method for a bioassay that generates mass spectral data from a sample that is diluted by a diluent, comprising:

providing a location in an n-dimensional space defined by n mass spectral features of at least one control centroid associated with a preferred diluent concentration and composition;

providing a location in the n-dimensional space of at least one test centroid associated with a test sample;

comparing the at least one test centroid to the at least one control centroid to determine the displacement in the n-dimensional space of the at least one test centroid from the at least one control centroid; and

determining a degree of error between the test centroid and the control centroid.

29. (New) The quality control method of any of claim 28, wherein the test sample is accepted for analysis if the displacement of the at least one test centroid from the at least one control centroid is within an acceptable distance.

30. (New) The quality control method of any of claim 28, wherein the sample is serum.

31. (New) The quality control method of any of claim 28, wherein the mass spectral data is generated by an electrospray ionization technique.

32. (New) A quality control method for a bioassay that generates mass spectral data from a sample that is diluted by a diluent, comprising:

providing a location in an n-dimensional space defined by n mass spectral features of at least one control centroid associated with a preferred diluent concentration and composition;

providing a location in the n-dimensional space of at least one test centroid associated with a test sample; and

comparing the at least one test centroid to the at least one control centroid to determine the displacement in the n-dimensional space of the at least one test centroid from the at least one control centroid; wherein the magnitude of the displacement is an indicator as to reliability of the bioassay applied to the test sample.

33. (New) The quality control method of any of claim 32, wherein the test sample is accepted for analysis if the displacement of the at least one test centroid from the at least one control centroid is within an acceptable distance.

34. (New) The quality control method of any of claim 32, wherein the sample is serum.

35. (New) The quality control method of any of claim 32, wherein the mass spectral data is generated by an electrospray ionization technique.